# Nebraska Forest Service

**University of Nebraska-Lincoln**

# Forest Health Highlights 2021

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## The Forest Resource

Nebraska has 1.5 million acres of forestland and an additional 1.3 million acres of non-forestland with trees. Ponderosa pine forests dominate the west and represent the eastern-most range of this species in the U.S. Central hardwood forests typical of the eastern U.S. are found in the eastern part of1008 the state (figure 1), and the birch/aspen forests in northern Nebraska are representative of northern boreal forests. These forest types, combined with elm-ash-cottonwood riparian forests, mixed conifer forests, conservation tree plantings and urban forests, create a highly diverse and unique array of tree and forest resources growing within an agricultural and range landscape.

*Figure 1: Red oak in fall color at Mahoney State Park in eastern Nebraska.*

The dominant species of Nebraska's non-forestland with trees (defined as less than one acre, less than 120 feet wide and less than 10% stocked) are eastern redcedar, Siberian elm, hackberry, red mulberry and ash; although by cubic volume, cottonwood/poplar species dominate. Trees on non-forestland provide unique benefits such as wind protection, snow drift management, energy savings, livestock protection, crop protection and yield increases, water quality and soil

protection, wildlife habitat and other ecosystem services, as well as aesthetic benefits and make communities more livable. Although not large units individually, these areas are important components in Nebraska's urban and rural landscapes.

# Forest Pests and Problems of Note in 2021

### Fall 2020 and Winter 2021 Low Temperatures

Extremely low temperatures (below zero Fahrenheit) occurred in fall of 2020 (figure 2), followed by extremely low temperatures in February 2021 (reaching near 30 below zero in some locations). These conditions likely stressed trees and may have contributed to branch dieback, mortality and evergreen browning in 2021 (figure 3). Young redcedar windbreaks exhibited scattered tree mortality for the 2nd year in a row.

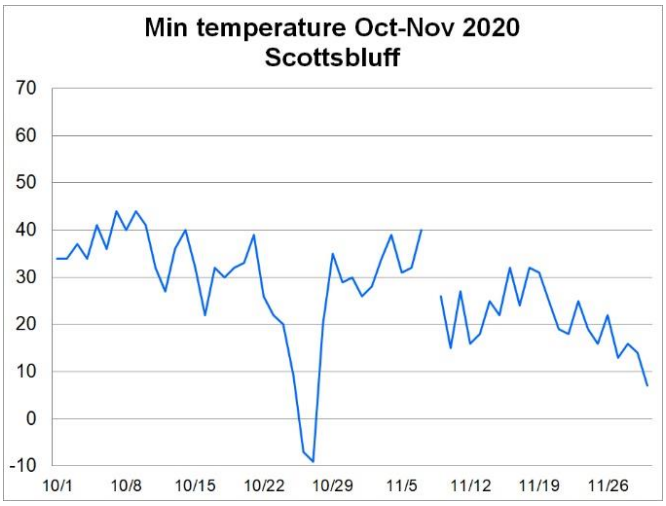


*Figure 2: Early extremely low temperature in fall 2020 likely led to conifer browning and some mortality in spring 2021. Temperature in degrees Fahrenheit.*

*Figure 3: Extremely cold February 2021 temperatures caused winter freeze damage above the snowline. Bottom part of shrubs were protected by snow.*

## Herbicide Damage

Damage to trees likely due to herbicide exposure was common again in 2021. Growth regulator-type herbicides such as 2,4-D and dicamba are used in agricultural fields and urban landscapes and often drift or volatize and damage trees nearby. Oaks, hackberry, maples, and legumes such as redbud are commonly affected.

## Magnolia Scale

Magnolia scale (*Neolecanium cornuparvum*) continued to be reported on flowering magnolia trees in 2021. The scales feed on twigs (figure 4) and may cause some yellowing and dieback. Excessive amounts of honeydew are often produced, with subsequent growth of sooty mold (figure 5). The scales are yellowish to brown and secret a white waxy substance over their bodies.

*Figure 4: Magnolia scale.*

*Figure 5: Sooty mold on magnolia leaves due to buildup of honeydew excreted by magnolia scale.*

**Pine Engraver Beetles**

Activity of pine engraver beetles (*Ips* spp.) in the pine ridge in northwest Nebraska has remained steady over the past several years with some mortality of ponderosa pine. Recent fires and drought have stressed trees, making them more susceptible to beetle attack. A survey conducted by the US Forest Service, Rapid City Service Center, in November 2021, in a portion of the pine ridge south of Chadron, showed similar pine mortality due to beetle attack in 2020 and 2021. Mortality was considered low in most locations surveyed. A number of trees stressed by fire or heavily damaged by *Diplodia* blight remain and could become breeding material for the beetles, resulting in a buildup of beetle populations (Survey Report RCSC-22-02, Febr 8, 2022, Kurt Allen and Kendra Schotzko).

**Dioryctria pine moths (Zimmerman pine moth and relatives)**

Infestations of *Dioryctria* pine moths continued to be reported in 2021. These borers tunnel just below the bark in branches and trunks, causing breakage and dieback. Telltale signs of infestation include masses of resin (pitch) on the bark, often mixed with frass (figure 6). Three species of *Dioryctria* trunk borers are present in the state: the true Zimmerman pine moth, *D. zimmermani*, in and around Douglas and Washington counties; *D. tumicolella*, in much of the central and western portions of the state and in Lancaster County; and *D. ponderosae,* in Thomas, Brown, Holt, and Sheridan counties.

*Figure 6: Pitch masses on trunk of ponderosa pine in Brown County, Nebraska, caused by Dioryctria borers (Image courtesy of Jason Severe, Nebraska Forest Service).*

## Other Pine Pests

Pine wilt (*Bursaphelenchus xylophilus*) continues to kill Scotch pine across the state. Diplodia blight (*Diplodia pinea*), affecting mainly Austrian and ponderosa pine, remains a serious disease of mature trees in both native stands and ornamental landscapes. Tip moth (*Rhyacionia* spp.) is causing tip death in young pines, which stunts branches and affects the overall form of trees (figure 7).

*Figure 7: Tip moth (Rhyacionia spp.) hollows out pine buds, which causes stunting in young trees.*

## Foliar Diseases

Conifer foliar diseases have been building in recent years, including Cercospora needle blight (*Pseudocercospora juniperi*) and *Gymnosporangium* rusts on eastern redcedar and Rocky Mountain juniper and *Dothistroma* needle blight on pines. Spruce, which are popular trees for ornamental plantings and which are sometimes found in windbreaks, have been displaying significant needle drop due to *Stigmina* and *Rhizosphaeria* needlecast diseases. Rust diseases have been severe also on broadleaf ornamentals like hawthorn, pear, and crabapple. Anthracnose (various fungi) has frequently caused leaf browning and defoliation in ash and sycamore in recent years.

**Emerald Ash Borer (EAB)**

One new county was added to the list of EAB-infested counties in 2021. Adult beetles were captured in a trap deployed by the Nebraska Department of Agriculture in the city of Columbus (Platte County). To date, EAB has been detected in Buffalo, Cass, Dodge, Douglas, Hall, Lancaster, Platte, Saunders, Seward, and Washington Counties (figure 8).

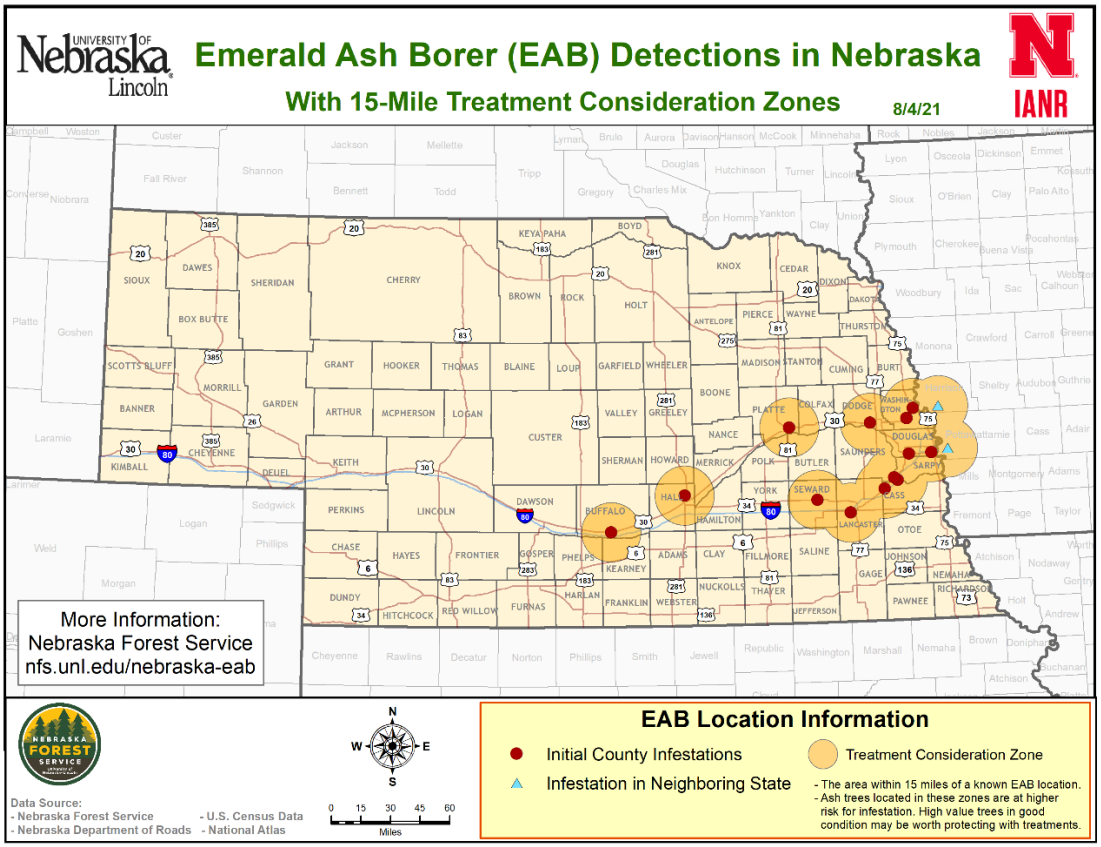
University of Nebraska Lincoln
Emerald Ash Borer (EAB) Detections in Nebraska
With 15-Mile Treatment Consideration Zones
8/4/21
IANR
More Information:
Nebraska Forest Service
nfs.unl.edu/nebraska-eab
EAB Location Information
Initial County Infestations
Infestation in Neighboring State
Treatment Consideration Zone
- The area within 15 miles of a known EAB location.
- Ash trees located in these zones are at higher risk for infestation. High value trees in good condition may be worth protecting with treatments.
Data Source:
- Nebraska Forest Service
- Nebraska Department of Roads
- U.S. Census Data
- National Atlas
0 15 30 45 60
Miles

*Figure 8: Emerald ash borer in Nebraska.*

## For more information on forest health in Nebraska, please visit the Nebraska Forest Service website:

## www.nfs.unl.edu